

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Casper van Duuren
Student number	5069491

Studio		
Name / Theme	Design of the Urban Fabric	
Main mentor	Rients Dijkstra	Automobile, urban mobility, urban design, city, spatial planning
Second mentor	Nico Tillie	Urban landscape, planning, ecology, inner city, transition, quality of life.
Argumentation of choice of the studio	My first choice for the studio would be the Design of the Urban Fabric studio, since I think that is where I can get the most out of the direction I want to go to, because I like how they explained about the physical and psychological elements and how they want you to explore these and intertwine them. Also because they asked the question on how we have to live together and that is what I want to explore in my project. I also felt like this studio is a more designing studio, which I think would fit my project the best, but also because the evidence based designing is what I think the most interesting one.	

Graduation project	
Title of the graduation project	Ecological Road Design
Goal	
Location:	Leiden
The posed problem,	In recent decades, the world's population has increased exponentially and is expected to increase even more in the coming years. More and more people are moving to the city. In the Netherlands, too, we are dealing with population growth in the Randstad, and therefore also in Leiden. This increase puts extra pressure on the already extensive road network. The road network of Leiden has a negative impact on the ecosystem services that are related to roads. This lack of improving road ecosystem services makes the road network unable to cope with today's

	<p>urban challenges, such as climate change, people’s health and urban biodiversity. The current road system can even form a barrier between ecological structures. Roads play a significant role in the city’s performance, and therefore also have great potential to make a positive contribution to the aforementioned problems. A road network will always be part of modern developed cities, so serious discussion about alternative design for road infrastructure within urban landscaped are now needed.</p>
<p>research questions and</p>	<p>How can urban ecosystem services related to roads be improved, by using the arterial road network of Leiden?</p>
<p>design assignment in which these result.</p>	<p>[Design Assignment]</p>
<p>The objective of the project is to explore the role the road network of Leiden can have as climate proof structures, can be beneficial for inhabitants mental and physical well-being and can serve as an ecological corridor between the city’s biodiverse hotspots.</p>	
<p>Process</p>	
<p>Method description</p>	

[A description of the methods and techniques of research and design, which are going to be utilized.]



Policy analysis

This method will be used to get a better understanding of the current documents that the municipality has made about the city of Leiden. It gives an perspective of the local ambitions on a certain topic. These will be used to create a more feasible design



Mapping

Mapping is part of the field trip method and consists of using available maps online to understand the different layers of the projects location. These can be used to create patterns and extract specific information about a topic.



Reference analysis

Exploration of similar projects around the world that deal with the same challenges as this project. Used to get a better understanding of what works in which situation and what doesn't work. Also used to get inspiration for designing.



Data analysis

This method is being used to get quantitative and qualitative data and reveals patterns and relationships in certain topics. This mainly used to create hard numbers.



Designing

The theoretical information is used now to create actual spatial elements. This can give new insights on the topic and can also inspire others to get involved in the topic. It also serves as a test of the research that has been done.



Literature research

A lot of sources are available for the public. This method focuses on reviewing these sources on existing knowledge of the projects topic and analyse them in order to create personal conclusions.



Typology study

This method is used to create a comprehensive understanding of complex situation, and gives insights in relations between these situations.



Field trip

Going to the site of the projects gives an real-life experience of the current situation. Pictures are being made and a good feeling of the environment can be stated.

Literature and general practical preference

[The literature (theories or research data) and general practical experience/precedent you intend to consult.]

Most important is the literature about ecosystem services that relate to roads, and literature about road ecology. Also ecological references are consulted. This includes:

- Natural capital and Roads by Lisa Mandle, Rob Griffin, Josh Goldstein, Rafael Acevedo-Daunas, Ashley Camhi, Michele Lemay, Elizabeth Rauer, Victoria Peterson.
- The Green City by Jürgen Breuste
- Biphilic streets: A design framework for creating multiple urban benefits by Agata Cabanek, Maria Elena Zingoni de Baro, Peter Newman

Furthermore literature about societal and economic benefits are being consulted.

Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

The topic of my project is related to the studio in a sense that when we talk about the road network of a city, we instantly talk about a big part of the fabric of a city. By designing this a relation can be seen between the road network and the fabric/ patterns of a city. Because talking about road systems in a dense urban environment there are many connections with my master track Urbanism, but it also touches upon the landscape architecture track, since ecology is an important part of the project, and therefore my second mentor is from this department.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

We can no longer ignore the effects of climate change now has real and touchable consequences for a city. We have to find ways to cope with this. Most cities are now dominated by stone and concrete, and it is difficult to find places that can be transformed into green urban structures. Limited green space in the city can cause various problems, like the urban heat island effect, little biodiversity, health hazards, livability and so on. With the already declining biodiversity around the world it is important to look at how we can get an increase. Road infrastructure is one of the main urban spaces that cause problems. A highly densified area with an extended road system can even exacerbate these problems. Therefore it is important to look at how a street profile can be designed in a way that is resilient to effects of climate change, but also creates economic and societal benefits. This project will focus on how an extended road infrastructure, in this case in the city of Leiden, can be used in order to create green urban corridors and can serve as a connection between green urban areas. This way urban biodiversity will increase but it will also have positive effect on people living in cities.